


April 9, 2013

SUBJECT: Ecological Risk at Moran Towing Property
TO: Kimberly Staiger, Region 2 On-Scene Coordinator
FROM: Mark Sprenger, ERT and Cheryl Hawkins, ERT



The Moran Towing property (henceforth the Site) at 2015 Richmond Terrace, Staten Island, NY, is part of the former Jewett White Lead facility. The Site consists of an industrial lot that contains a few buildings with the remaining area nearly completely paved, and a tug-boat docking area consisting of a bulkhead and long docks on two sides with a narrow opening into the Kill Van Kull shipping lane. The Site is located in an area zoned for commercial/industrial operations.

In June 2009, surface soil samples were collected from areas at the Site where the concrete paving was broken or areas where grit had collected. The average lead concentration was 1030 ppm. In October 2010, EPA returned to the Site to collect soil borings from the paved area and to install two monitoring wells on opposite corners of the Site. Elevated lead levels are present in the soils across the Site, with the highest concentrations of lead detected in soil samples collected at the 5 foot and 6 foot depth intervals.

EPA returned to the Site in September 2011 to collect sediment cores from the boat docking area and to install additional monitoring wells. Elevated lead levels substantially above the EPA project action limit of 31 mg/kg for lead in sediment was detected in all of the sampling intervals of three of the four sediment cores collected. Additional sediment cores were collected in October 2012 outside of the dock area into the Kill Van Kull shipping lane. The concentrations of lead in these final sediment core samples were substantially lower than in the sediments collected within the dock area. Water samples collected from the installed monitoring wells did not indicate that the subsurface lead contamination was impacting the groundwater.

Based upon the sampling data from both the soil and sediment cores, the concentrations of lead contamination present at the Site is sufficient to represent a contamination source and is a potential threat to the surrounding environment. However, evaluation of the lead distribution from the sampling efforts conducted suggests that the lead contamination is currently contained on Site, and substantive releases of lead are not occurring. The existing asphalt and concrete paving present throughout the Site property acts as a physical barrier to surface releases, and monitoring well data does not indicate that groundwater is impacted by the elevated lead levels present in the subsurface soils.

Several lines of evidence exist supporting the conclusion that the contaminated sediment within the docking area is not being actively released to the surrounding environment:

- The distribution of lead contamination in sediments
- Refusal of sediment penetration by sampling equipment

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- Observed water movement during tug boat operations (docking and disembarking)
- Water depths have not increased or decreased in the docking area.

Distribution of lead in sediment cores

The majority of the lead contamination in the sediment cores is located within the docking area at the surface and at depth. The sediment cores collected outside the docking area do not show a clear spatial trend of lead contamination either in the surface core interval between sampling locations or internally within the cores. The lead ranged from 1.9 mg/kg to 1,100 mg/kg in the sediment cores installed outside the docking area, with the highest concentration (1,100 mg/kg) detected in the 0.5 – 1' depth interval. Within the docking area, lead ranged from 2.5 mg/kg to 29,000 mg/kg, with the highest concentration (29,000 mg/kg) detected in the 2-3' depth interval. Three of the six sediment cores installed outside the docking area do not have lead concentrations greater than 45 mg/kg.

Refusal of sediment penetration

The sediment coring was conducted with a vibracore on both sampling events. Vibracoring is one of many subsurface sediment acquisition (sediment coring) techniques, and is used to obtain sediment samples by vibrating a core barrel into the sediment until it reaches project depth or until the core barrel is rejected from further penetration. Two of the sediment coring locations within the docking area met refusal. Refusal occurs when the vibracore is rejected from further penetration into the sediments due to an obstruction, and is indicative of the presence of hard structure material overlying the sediments.

Sediment sampling refusal also occurred at all but one sampling location within the docking area when a petit ponar dredge was used to collect surface sediments. The ponar dredge is a device that consists of a set of jaws, which shut when lowered to the surface of the sediment. The sampling refusal with the petit ponar dredge is indicative of the presence of a hard structure covering the sediment water interface within the docking area, in effect "armoring" the sediments.

Observed water movement during tug boat operations

Evidence of a hard structure material that exists at the sediment/water interface is consistent with the tug boat operations and docking that occur within the industrial docking area. Tug boat activity generates localized high water movement, known as prop wash, which would disperse lighter sediments and leave larger, hard structure material in place. This process can result in effectively placing an armored surface (a thin protective layer) at the surface water/sediment interface which could hold subsurface sediments in place.

Water depths have not increased or decreased in the docking area

Typically docking areas accumulate sediments over time and require periodic maintenance dredging in order to maintain water depth. Anecdotal information provided by employees at the Moran Towing

Company indicates that the docking area has never been dredged in the seventy years that they have operated on the property. The lack of maintenance dredging in the docking area suggests that sediments are neither accumulating nor leaving the docking area.

Surface sediment concentrations of lead exist within the docking area at concentrations as high as 2,900 mg/kg. The docking area is an industrial use area and has minimal habitat value and/or ecological use. The tug boat operations within the docking area occur 24 hours a day, 7 days a week, 365 days a year. The docking area at the Site property is comparable to a terrestrial heavy equipment/trucking parking lot. Tug boat operations would render the area unusable by most aquatic species, and the associated prop wash would displace, injure or kill organisms, preventing active use of the area by ecological receptors. The design of the docking area, with the docks extending out from the shoreline to form a partially enclosed area, would limit the movement of fish into the docking area even should they be moving along the shoreline, as they would tend to move past the opening between the docks rather than swim into the area as they migrate through the Kill Van Kull. Based upon the information gathered during the site investigation, the ecological risks are negligible at this time based upon current use and therefore remediation on the basis of ecological risk is not required.

It is important to recognize that the elevated concentrations of lead present in the sediments and the subsurface soils pose an environmental hazard and are a potential source of contamination to the environment should conditions at the Site change. Future construction activities, including bulkhead or dock repairs and changes in the property use, such as changes to the fleet of tug boats or use of the docking area by other watercraft, may alter the Site conditions which could potentially release contaminants to the environment. If a release of lead contamination at concentrations present on the Site property occurs, the release could potentially pose a significant and substantive ecological risk at the Site property and to receptors in the Kill Van Kull.